Examining the Effect of Selenium in Improving Non-alcoholic Fatty Liver Disease in Rats

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Abstract

Introduction: Given the prevalence of risk factors for metabolic syndrome, non-alcoholic fatty liver disease (NAFLD) is the most common cause of liver disease in society. In this study, the effect of selenium in improving NAFLD was investigated in rats. Methods: In this experimental study, 40 adult female Wistar rats were divided into five groups, each consisting of eight rats. Fourty male Wistar rats were randomly assigned into 5 groups of 8: control, Sham (high-fat diet = HFD) and HFD treated with 0.25, 0.5 and 1 mg/kg doses of selenium.). Selenium was fed by gavage to therats. At the end of the experiment, the rats were weighed. Blood samples were taken from heart of the rats (blood samples were obtained by cardiac puncture). Finally, serum alanine aminotransferase (ALT), aspartate aminotransferase (AST), alkaline phosphatase (ALP), low-density lipoprotein (LDL), high-density lipoprotein (HDL), triglyceride (TG), and total cholesterol (TC) levels were measured. 5 mu tissue sections were prepared from livertissue. The sections were stained with hematoxylin and eosin. Findings: The results showed that mean serum concentration of TG, TC, LDL, ALT, AST, and ALP significantly increased in the group receiving HFD compared to control group. TC, LDL, ALT, and ALP serum concentration significantly decreased in the groups receiving 0.5 and 1 mg/kg selenium compared to the group receiving HFD. TG and AST serum concentrations significantly decreased inthe group receiving 1 mg/kg selenium compared to the group receiving HFD. All doses of selenium had no effect on mean serum levels of HDL. The best dose of treatment was 1 mg/kg. The results showed that selenium with antioxidant properties reduces and prevents damaging effects of fatty liver in rats.

Keywords: Fatty liver; rat; selenium